volves a belief in the homological identity of organisation between very distant groups of the animal kingdom, a belief which all recent embryological research has only tended to confirm.

(*To be continued.*)

SCIENTIFIC SERIALS

American Journal of Science and Arts, June.—The original articles in this number are :—Results of dredging expeditions of the New England Coast in 1874, by A. E. Verrill. More than 100 species new to the fauna of southern New England were secured. Most of these are northern species, but many are undescribed. A table giving nature of bottom and temperature at the surface and bottom of the sea is given.—Mr. Fontaine's paper on the Primordial Strata of Virginia is continued and concluded. At the end is given a comparison with the metamorphic crystalline rocks of the Blue Ridge.—On the occurrence of the Brown Hematite deposits of the Great Valley, by Frederick Prime, jun.—Note on some new points in the elementary stratification of the Primordial and Canadian rock of south central Wisconsin, by Roland Irving. The order for the Lower Silurian strata of Wisconsin has been generally accepted as (beginning from below) 1. Potsdam sandstone ; 2. Lower magnesian limestone ; 3. The St. Peter's sandstone ; 4. The blue and buff limestones ; 5. The Galena limestone ; 6. The Cincinnati group. The succession as now made out is (beginning from below) 1. The Lower or Potsdam sandstone ; 2. The Mendota limestone ; 3. The Madison sandstone ; 4. The main body of limestone ; 5. The St. Peter's sandstone. A table of correlation is given with the Mississippi Bluffs and the Minnesota River.—On the application of the horizontal pendulum to the measurement of minute changes in the dimensions of solid bodies, by Prof. O. N. Rood.—On diabantite (a chlorite), by G. W. Hawes.—Re-discovery of double star H.I. 41, by S. W. Burnham. It is about 46′ north of the well-known double star ψ Draconis, and is easily found without an equatorial mounting.—On the distribution of electrical discharges from circular discs, by C. J. Bell.—Examination of gases from the meteorite of Feb. 12, 1875, by A. W. Wright.—On limonite with the colour and transparency of göthite, by Prof. Mallet.—Under the head "Scientific Intelligence," the original notes are :—On the surface geology of Ohio ; On the Prototaxites of Dawson ; On the Crustaceans of the caves of Kentucky and Indiana, together with several reviews.

Fourth and Fifth Annual Reports of the Wellington College Natural History Society, Dec. 1872 to Dec. 1874.—We are gratified to see that this Society is in a much more hopeful condition than it was when we noticed its last Report, the tone of which was almost despairing. The attendance has been very much better, and the interest taken in the Society by the boys is evidently increasing. Judging from the lists a fair amount of field-work in natural history has been done, and the Society is gradually forming good collections. But, as the preface to one of the Reports hints, there is still much room for improvement in the subjects and character of the papers read at the meetings. Except in the case of lectures by outsiders, the majority of the papers are the result of reading and not of observation or experiment, and not many of them can strictly be called scientific. Now, however useful such exercises as these may be to the boys, this is scarcely the sort of work one looks for from members of a Natural History Society. We think this Society might well take a leaf out of the Rugby Society's Report, and go in much more extensively for organised field-work, encouraging the boys to use their eyes and their hands on nature as well as on books, and to bring forward papers embodying the results of their observations, papers of a character similar to the interesting one of the president, the Rev. C. W. Penny, on "Natural History in the Christmas Holidays." Not only would the members thus reap much benefit, both in the way of discipline and instruction, but we are sure a greater interest in the Society would be created in the School. The Society has evidently got a good second start, and we trust that the next Report will show as great an advance on the two under notice as these do on the previous one.

Riga Society of Naturalists.—Nos. 8 and 9 of this Society's publications contain three papers of importance, besides meteorological reports and notes of smaller interest. The more important papers are : On some theories of earthquakes, by Prof. Schweder.—On the changes in the Düna estuary, by M. Gottfried.—On the fauna of Spitzbergen, by Prof. Nordenskjöld, showing that this fauna consists of 15 species of quadrupeds, 23 of birds, 23 of fishes, 64 of insects, 100 of Crustaceæ, and 130 of sea molluscs.—There is also an obituary notice of the late Dr. Ernst Nauck, who died at Riga on Jan. 26 last.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, June 10.—"Experiments on Stratification in Electrical Discharges through Rarefied Gases," by William Spottiswoode, M.A., Treas. R.S.

In the stratified discharges through rarefied gases produced by an induction-coil working with an ordinary contact-breaker, the striæ are often unsteady in position, and apparently irregular in their distribution. Observations made with a revolving mirror, which the author hopes to describe on another occasion, have led him to conclude that an irregular distribution of striæ does not properly appertain to stratification, but that its appearance is due to certain peculiarities in the current, largely dependent upon instrumental causes.

The beautiful and steady effects obtained by Mr. Gassiot with his Leclanché battery, and also more recently by Mr. De la Rue with his chloride-of-silver battery, have abundantly shown the possibility of stratification free from the defects above mentioned ; but it must be admitted that the means employed by those gentlemen are almost gigantic. The present experiments were undertaken by the author with the view of ascertaining, first, how far it was possible to approach towards similar results with instruments already at his command ; and secondly, whether these would afford other modes of attack, beside the battery, on the great problem of stratified discharges.

The induction-coil used was an "18-inch" by Apps, worked occasionally by six large chloride-of-silver cells, kindly lent the the author by Mr. De la Rue, but more usually by ten or by twenty Leclanché cells of the smallest size ordinarily made by the Silvertown Company. He has also, in connection with the same coil, 120 of the latter cells, connected in twenties for quantity, and forming six cells of twenty times the surface of the former. These work the coil with the ordinary contact-breaker very well, giving 11-inch sparks whenever required. A "switch" affords the means of throwing any of the three batteries in circuit at pleasure.

Having reason to think that the defects in question were mainly due to irregularity in the ordinary contact-breaker, he constructed one with a steel rod as vibrator, having a small independent electromagnet for maintaining its action. The details of construction of this contact-breaker are described.

With a contact-breaker of this kind in good action, several phenomena were noticeable ; but first and foremost was the fact that in a large number of tubes (especially hydrocarbons), the striæ, instead of being sharp and flaky in form, irregular in distribution and fluttering position, were soft and rounded in outline, equidistant in their intervals, steady in proportion to the regularity of the contact-breaker. These results are, the author thinks, attributable more to the regularity than to the rapidity of the vibrations. And this view is supported by the fact that, although the contact-breaker may change its note (as occasionally happens), and in so doing may cause a temporary disturbance in the stratification, yet the new note may produce as steady a set of striæ as the first. And not only so, but frequently there is heard, simultaneously with a pure note from the vibrator, a strident sound, indicating that contacts of two separate periods are being made, and yet, when the strident sound is regular, the striæ are steady. On the other hand, to any sudden alteration in the action of the break (generally implied by an alteration in the sound) there always corresponds an alteration in the striæ.

The author then attempts to show the extreme delicacy in action of this kind of contact-breaker, or "high break," as it may be called.

The discharges described above are usually (although not always) those produced by breaking contact ; but it often happens, and that most frequently when the strident noise is heard, that the current produced by making contact is strong enough to cause a visible discharge. This happens with the ordinary as with the high break ; but in the latter case the double current presents the very remarkable peculiarity, that the striæ of one current are so arranged as to fit exactly into the intervals of

the other. And further, that any disturbance affecting the column of striæ due to one current affects similarly, with reference to absolute space, that due to the other, so that the double column moves, if at all, as a solid or elastic mass. And this fact is the more remarkable if we consider, as is easily observed in a revolving mirror, that these currents are alternate, not only in direction, but also in time, and that no one of them is produced until after the complete extinction of its predecessor. And it is also worthy of note that this association of striæ is not destroyed, even when the two currents are separated more or less towards opposite sides of the tube by the presence of a magnetic pole. There seems, however, to be a tendency in that case for the striæ of one current to advance upon the positions occupied by those of the reverse current, giving the whole column a twisted appearance. But as there is no trace, so far as the author's observations go, of this association of alternate discharges when produced by the ordinary break, we seem led to the conclusion that a stratified discharge, on ceasing, leaves the gas so distributed as to favour, during a very short interval of time, a similar stratification on the occurrence of another discharge, whether in the same or in the opposite direction. An explanation of the fact that the striæ of alternate discharges occupy alternate and not similar positions is not obvious, and probably demands a better knowledge of the nature of the striæ than we possess at present.

The column of striæ, which usually occupy a large part of the tube from the positive towards the negative terminal, have hitherto been described as stationary, except as disturbed by irregularities of the break. The column is, however, frequently susceptible of a general motion, or "flow," either from or towards the positive pole, say a forward or backward flow. A similar phenomenon was observed by Mr. Gassiot in some tubes with his large battery, but the author is not acquainted with the exact circumstances under which it was produced. This flow may be controlled, both in velocity and in direction, by resistance introduced into the circuit, or by placing the tube in a magnetic field. The resistance may be introduced in either the primary or the secondary circuit. For the former arrangement the author successfully employed a set of resistance-coils, supplemented by a rheostat. For the secondary current, as well as for the Holtz machine, he has used an instrument devised and constructed by his assistant, Mr. P. Ward, to whose intelligence and skill he is much indebted throughout this investigation, intended for fine adjustment. Wherever the resistance be introduced the following law appears to be established by a great number and variety of experiments, viz., that, the striæ being previously stationary, an increase of resistance produces a forward flow, a decrease of resistance a backward flow. The author has generally found that a variation of 3 or 4 ohms, or, under favourable conditions, of 1 or 2 ohms, is sufficient to produce this effect. But as an alteration in the current not only affects the discharge directly, but also reacts upon the break, the effect is liable to be masked by these indirect causes. The latter, so far as they are dependent upon a sudden alteration of the resistance, may be diminished by the use of the rheostat; but when the striæ are sufficiently sensitive to admit the use of this delicate adjustment, some precautions are necessary to ensure perfect uniformity of current, so as to avoid disturbances due to uneven contact in the rheostat itself.

When the striæ are flowing they preserve their mutual distances, and do not undergo increase or decrease in their numbers. Usually one or two remain permanently attached to the positive electrode; and as the moving column advances or recedes, the foremost stria diminishes in brilliancy until, after travelling over a distance less than the intervals between the two striæ, it is lost in darkness. The reverse takes place at the rear of the column. As the last stria leaves its position, a new one, at first faint and shadowy, makes its appearance behind, at a distance equal to the common interval of all the others. This new one increases in brilliancy until, when it has reached the position originally occupied by the last stria, when the column was at rest, it becomes as bright as the others. The flow may vary very much in velocity; it may be so slow that the appearances and disappearances of the terminal striæ may be watched in all their phases, or it may be so rapid that the separate striæ are no longer distinguishable, and the tube appears as if illuminated with a continuous discharge. In most cases the true character of the discharge, and the direction of the flow, may be readily distinguished by the aid of a revolving mirror. In some tubes, especially in those whose length is great compared with their diameter, the whole column does not present the same phase of flow; one portion may be at rest while another is flowing, or even two conterminous portions may flow in opposite directions. This is seen also in very wide tubes, in which the striæ appear generally more mobile than in narrow ones. But in all cases these nodes or junction-points of the flow retain their positions under similar conditions of pressure and current; and it therefore seems that, under similar conditions, the column in a given tube always breaks up into similar flow-segments.

These nodes will often disappear under the action of a magnetic pole. Thus, if the first segment, measured from the positive terminal, be stationary and the second be flowing backwards (*i.e.* from − to +), a magnetic pole of suitable strength, placed at the distant end of the latter, will stop its flow, and the whole column will become stationary throughout. An increase in the strength of the magnet, or a nearer approach of it to the tube, will produce a general forward flow of the column.

The phenomena of the flow, as well as others of not less interest, are capable of being produced with the Holtz machine. It is well known that stratified discharges, similar to those produced by an induction-coil working with an ordinary break, may be produced by such a machine, provided that it be furnished with the usual Leyden jars, and a high resistance (usually a piece of wetted string) be interposed in the circuit. The absence of either of these conditions was supposed to destroy the striæ and to render the discharge continuous. Experiments which the author has recently made, but do not describe on the present occasion, tend in part, but only in part, to confirm this view. They show that for the production of striæ both quantity and resistance are necessary, that the discharge must occupy a certain short, perhaps, but finite time, or, as it may also be expressed, that a continuous current is an essential element.

Now, seeing that every tube must offer some resistance, and also that by adjusting the height of the vertical condensors of the machine (or length of air-spark interposed in the circuit) we had the means of altering the quantity in the discharge, it seemed worth while to try whether, by a suitable adjustment of the parts, phenomena similar to those brought out by the coil and high break might not be produced by the machine. And this proved to be very easy of attainment in tubes which had been successfully used by the coil; and not only so, but the character of the flow therein shown confirmed in a very striking and simple manner the effects of resistance described above.

The connections being made in the usual way, and no air-spark being admited into the circuit, a vacuum-tube of carbonic oxide, about 60 centims. in length and 4·5 centims. in outside diameter, gave, when the plates of the machine revolved at about six times per second, a rather confused discharge. As the speed was increased a rapid forward flow of the striæ was readily discerned; and on a still further increase to about ten revolutions per second, the flow, first in one part and then throughout nearly the whole length of the tube, slackened its pace and stopped, and ultimately reversed its motion. An increase of speed is equivalent to an overcoming or a diminution of resistance in the circuit, a diminution of speed to an augmentation of resistance. Hence the phenomena of flow produced by the machine agree with those produced by the coil.

The author concludes by referring to the effects obtained with sulphurous acid and other tubes, and by describing the resistance-coil used for the secondary current.

Chemical Society, June 17.—Prof. Abel, F.R.S., in the chair.—Notes on the chemistry of tartaric and citric acid, by Mr. R. Warrington, gives many important particulars connected with the manufacture of these acids; and also detailed accounts of the methods of analysis—many of them novel—of the various raw materials from which they are made.—After this the Secretary read a communication on the action of nitric acid on copper, mercury, &c., especially in the presence of metallic nitrates, by Mr. J. J. Ackworth.—Dr. Gladstone then gave a short account of the decomposition of water by the joint action of aluminium and aluminium iodide, bromide, and chloride, including instances of reverse action, by himself and Mr. Tribe.—The other papers were on nitrosyl-bromide and on sulphuro-bromide, by Mr. M. M. P. Muir.—On achrematite, a new molybdo-arseniate of lead from Mexico; and on certain new reactions of tungsten, both by Prof. J. W. Mallet; and on the action of chlorine on acetamide, by Dr. Prévost.

Geological Society, June 9.—John Evans, V.P.R.S., president, in the chair.—The following communications were read:

—On *Prorastomus sirenoïdes*, Owen. (Part II.), by Prof. Owen, F.R.S. The author has submitted the skull of a Sirenian from Jamaica, described by him in 1855 under the name of *Prorastomus sirenoïdes*, to a careful re-examination; and in this paper notices the characters revealed by further removal of the matrix, and discusses the bearings of the facts thus ascertained upon the relations of the animal and of the Sirenia generally. The parts which have been brought to light are the base and roof of the cranium, the zygomatic arches, the hind half of the mandible, with the articular part of the condyle, and the greater part of the atlas. The characters presented by these parts are described in detail, and the characters of the genus are compared with those presented by other genera of Sirenians, both living and fossil, especially *Manatus* and *Felsinotherium*. The dental formula of *Prorastomus* is given as—

$$i.\ \frac{3-3}{3-3?},\ d.\ \text{or}\ c.\ \frac{1-1}{1-1},\ p.\ \frac{5-5}{5-5},\ m.\ \frac{3-3}{3-3} = 48:$$

thus, as in *Manatus*, showing an excess in the molar series over the type of the terrestrial herbivorous mammalia, whilst the incisors and canines retain the common type as to number and kind, and have not been subjected to so great a degree of suppression or of individual excess of development as in existing Sirenians. The presence of these small subequal incisorsin both jaws of *Prorastomus* is the most marked feature in which *Prorastomus* adheres to the normal mammalian type, while showing the essential characters of the marine Herbivores; but a similar tendency is shown in other parts of the skull. The author regards the Sirenia as essentially monophyodont. *Halicore* and *Felsinotherium* depart further from the type than *Halitherium* and *Manatus*, and these than *Prorastomus*. *Rhytina*, with a better developed brain and with the jaws edentulous when adult, is an extreme modification of the Sirenian type. The rudimentary femur in *Halitherium* is to be regarded as the result of degeneration through lack of use, from better-limbed prototypal mammals. With respect to the genealogy of the Sirenia, the author remarks that Häckel derives the Sirenia, Zeuglodontes, and Cetacea, together with the Artiodactyla, from the branch Ungulata, and the Perissodactyla from the branch Pycnoderma of the Mammalian trunk; but that while *Halitherium* and *Felsinotherium* show the molar pattern of *Hippopotamus*, *Prorastomus* exhibits that of *Lophiodon* and *Tapirus*, to which *Manatus* also adheres rather than to any Artiodactyle type. The author suggests that both Ungulates and Sirenians diverged at some remote period from a more generalised (cretaceous?) mammalian gyrencephalous type? and that the marine Herbivora in the course of long Eocene and Miocene eons were subjected to conditions producing modifications of their molars, leading on one side to an Artiodactyle and on the other to a Perissodactyle character. As *Prorastomus* by its more generalised dentition and shape of brain represents a step nearer the speculative starting-point than any other Sirenian, it acquires a great interest, and the determination of the precise age of the (supposed Eocene) bed from which its remains were derived is very much to be desired.—On the structure of the skull of *Rhizodus*, by L. C. Miall, F.G.S. In this paper the author described a large skull of *Rhizodus* from the coal-shale of Gilmerton, near Edinburgh. The characters described show that *Rhizodus* is a Ganoid fish, and that its position in the order is not far from *Holoptychius* and *Megalichthys*. The author referred it to the cycloidal division of the family Glyptodipterini.—Appendix to a note on a modified form of Dinosaurian Ilium, hitherto reputed Scapula, by Mr. J. W. Hulke, F.R.S.—This paper contained a notice of the pubis of *Iguanodon*, which proves to be identical with the smaller of the two specimens figured by the author in a former paper (Quart. Journ. Geol. Soc. xxx. pl. xxxii. Fig. 1). When inverted, its long slender process is easily identified with that of the pubis of the nearly allied *Hypsilophodon*, and this slanted downwards and backwards parallel to the ischium, the little process of its posterior surface, meeting a corresponding process of the ischium, and converting the upper end of a long narrow obturator space into a foramen. The pubis of *Iguanodon* contributed largely to the formation of the acetabulum, thus resembling that of existing Lacertilia, as also in its possession of a broad ventral extension, probably united with that of the opposite side by a median symphysis. The specimens described in this paper were collected in the Isle of Wight by the Rev. W. Fox.—Notes on the Palæozoic Echini, by Mr. Walter Keeping, of the Woodwardian Museum, Cambridge; communicated by Prof. T. M'Kenny Hughes, F.G.S. The author alluded to the interest excited by the discovery of Echinoderms with flexible tests; and having pointed out the difference between the more modern and the Palæozoic forms (their plates imbricating in opposite directions), gave a description of the following forms:—(1) *Perischodomus*; (2) *Ræchinus*, g.n., sp. *R. irregularis* (Keeping); (3) *Palæchinus*(?) *intermedius* (Keeping); (4) *Palæchinus gigas* (McCoy); (5) *Palæchinus sphæricus* (McCoy); (6) *Archæocidaris Urii* (Fleming). In conclusion, the author proposed a new method of classification for the *Echinoidea*. He also noticed the existence in the Museum of the Royal School of Mines of a British fossil which appears to belong to the group of Echinoidea with numerous ranges of ambulacral plates, represented in America by the genera *Melonites*, *Oligoporus*, and *Lepidesthes*.—On some fossil Alcyonaria from the Australian Tertiary deposits, by Prof. P. Martin Duncan, F.R.S. In a former communication in 1870 the author described some fossil corals from the Tertiary strata near Cape Otway, in the province of Victoria. In one, which he called the "Upper Coralline bed," the equivalent of the Polyzoan limestone of Woods, he found specimens which he did not then describe, as they were not true corals. Belonging to the Isidinæ, and not being of great interest, he retained them until the receipt of some similar specimens from New Zealand, described in the following paper. The Australian forms described by the author were shown to be nearly allied to the recent *Isis hippuris* and the fossil *I. corallina*.—On some fossil Alcyonaria from the Tertiary deposits of New Zealand, by Prof. P. Martin Duncan, F.R.S. The New Zealand fossils referred to in the preceding paper were sent to the author by Capt. F. W. Hutton, F.G.S.; they were derived from the Awawoa Railway cutting, and were from the upper part of the Oawaru formation. They consisted of fragments of species of the genus *Isis* and of *Corallium*. These were compared with those from the Australian Tertiaries, and the author inferred that both deposits were formed under similar conditions, and that they were at least homotaxial, whatever their precise geological age might be.—On some fossil corals from the Tasmanian Tertiary deposits, by Prof. P. Martin Duncan, F.R.S. The author described a new species of *Dendrophyllia* possessing very unusual characters, the epitheca replacing the true wall, and giving the specimen a marked Palæozoic appearance. The fossil was obtained from a Tertiary deposit, and was associated with *Placotrochus deltoideus*, a well-marked coral, characteristic of a definite geological horizon in Victoria, namely, the lower beds of the Cape Otway section, belonging to the Lower Cainozoic period. For this coral he proposed the name of *Dendrophyllia epithecata*. A much worn reef-coral was found associated with the above.

Meteorological Society, June 16.—Dr. R. J. Mann, president, in the chair.—The following papers were read:—On a white rain or fog bow, by Mr. G. J. Symons.—On a proposed form of thermograph, by Mr. Wildman Whitehouse, F.R.A.S.—On the rainfall at Athens, by Prof. V. Raulin (translated by Mr. R. Strachan). These observations were made by M. Julius Schmidt, director of the Greek Observatory, and embrace a period of twelve years and a half, viz., from August 1859 to December 1871. The average yearly fall is 15·83 inches, and the average number of wet days ninety-three. The wettest year was 1864, when 28·30 inches fell, and the driest 1862, with 9·63 inches.—On the barometric fluctuations in squalls and thunderstorms, by the Hon. Ralph Abercromby. There are two classes of storms in this country: in one the barometer rises, in the other it falls. The author in the present paper only refers to the former. After mentioning some of the phenomena which accompany storms of this class, he proceeds to give two instances as typical of their general character. In conclusion he makes the following remarks on their origin:—Though in this country squall-storms are almost always associated with primary or secondary cyclones, those in India and Africa are not connected with cyclones, and hence the source of the barometric rise cannot be due to any special phenomenon of cyclone motion. Since the rise is always under the visible storm, it is propagated at the same rate and in the same manner as thunderstorms. Enough is known of the course of the latter to be certain that they are not propagated like waves or ripples, and hence these small barometric rises are not due to aërial waves, as has sometimes been suggested. Since the general character of the rise is the same whether there is thunder or not, it is evident that electricity, even of that intensity which is discharged disruptively, is not the cause of the rise. If we look at a squall from a distance, we always see above it cumulus, which is harder and more intense in the front than in the rear of the squall. Since cumulus is the condensed summit of an ascensional column of

air, it is evident that the barometric rise takes place under an uptake of air. If we consider further that a light ascensional current would give rise simply to an overcast sky, a stronger one to rain, while a still more violent one would project the air suddenly into a region so cold and dry that the resulting electricity would be discharged disruptively as lightning, the foregoing observations show that the greatest rise is under the greatest uptake. Some meteorologists attribute the low pressure at the equator to the ascending current formed at the junction of the trades; while others attribute the 10 A.M. maximum of the diurnal range of the barometer to the reaction of an ascending column of air due to the increasing heat of the day. The above observations tend to strengthen the view that an ascending column of air gives rise to a reactionary pressure downwards, and more generally to the idea that though the total pressure shown by the barometer is principally statical, or due to the weight of a definite column of air, a small portion is dynamical, or due to the reaction of air motion in that column. —Notes on solar radiation in its relation to cloud and vapour, by Mr. J. Park Harrison.—Mr. Scott also exhibited and described Lowe's graphic hygrometer.

Zoological Society, June 15.—Prof. Newton, F.R.S., V.P., in the chair.—A letter was read from Dr. A. B. Meyer, of Dresden, stating that having inquired into the statement made by Mr. Bruyn (P.Z.S., 1875, p. 30), that he had specimens of four species of Birds of Paradise alive in his possession at Ternate, he had ascertained that the foundation for this statement was that Mr. Bruyn expected to receive specimens of other species, but had only actually obtained examples of one of them (*Paradisea papuana*).—Mr. George Dawson Rowley exhibited and made remarks on some specimens of two diminutive Parrots from New Guinea (*Nasiterna geelvinkiana* and *N. pygmæa*).—Sir Victor Brooke exhibited and made remarks on two original drawings by Mr. Wolf of the two species of Koodoo, *Tragelaphus strepsiceros* and *T. imberbis*. The latter was taken from a specimen received direct from the Juba River, Somali. The exact habitat of this species had not before been determined.—Prof. Owen, C.B., read a paper in which he gave the description of some bones of *Harpagornis moorei*, sent to him by Dr. Haast, which had been found in the turbary deposits of Glenmark, a locality about forty miles from Christchurch, New Zealand. This paper formed the twenty-first part of Prof. Owen's series of memoirs on the extinct birds of the genus *Dinornis* and its allies. —Mr. G. E. Dobson communicated the descriptions of some new species of bats of the genus *Vesperugo*.—A communication was read from Mr. George Gulliver, F.R.S., containing observations on the sizes and shapes of the red corpuscles of the blood of Vertebrates. These observations were accompanied by a series of drawings of these objects, and by extended and revised tables of measurements.—A communication was read from the Rev. S. J. Whitmee, of Samoa, respecting the changes he had observed in the habits of feeding, roosting, and building of the *Diduncultus strigirostris*.—A second paper by Mr. Whitmee gave an account of the times of appearance of the Edible Marine worm (*Palola viridis*) in the islands of the Samoan group, together with observations on its habits.—A communication was read from Dr. J. S. Bowerbank, containing the fourth of a series of memoirs on the Siliceo-fibrous sponges.—Sir Victor Brooke, Bart., and Mr. A. Basil Brooke read a joint paper on the large Asiatic Wild Sheep or Argalis. Of these animals they recognised eight species, viz.: *Ovis ammon*, from the Altai between the Sea of Baikal and Thian Shan; *O. karelini*, from the Thian Shan; *O. poli*, from the Pamir; *O. hemsii*, from the Alexandrian Mountains; *O. nigrimontana*, from the Karatau; *O. hodgsoni*, from Little Thibet; *Ovis nivicola*, from the Stanovoi Mountains and Kamschatka; and *Ovis brookei*, of which the habitat was unknown.—Mr. Sclater read a paper on the Rhinoceroses now or lately living in the Society's Menagerie.

Victoria (Philosophical) Institute, June 21.—The Rev. Isaac Taylor, M.A., read a paper on the Etruscan language. After stating the causes which had made this language so long a mystery, the lecturer gave an account of the origin of the Etruscan alphabet, and of the information as to the nature of the language which is supplied by the bilingual inscriptions. He then gave an account of the inscribed dice, which he held to be the key to the Etruscan secret. He fully explained the Etruscan system of numeration, and showed that the numerals, the vocabulary, the grammar, and the mythology of this people all pointed to a Turanian origin.

PARIS

Academy of Sciences, June 14.—M. Frémy in the chair.—The following papers were read:—On the discovery of the two minor planets (144) and (145) by Director Peters, and (146) by M. Borrelly.—A note by M. Chevreul, on the explanation of numerous phenomena which appear as a consequence of old age.—Researches on solar radiation (continuation) by M. P. Desains.—On the synthesis of camphors by the oxidation of camphenes, by M. Berthelot.—On the water-spout which occurred near Caen in 1849, by M. Faye.—Some remarks, in complement to his note read before the Academy in May 1873 by M. Weddell, on the part played by the substratum in the distribution of Lichens inhabiting rocks.—A note by MM. E. Belgrand and G. Lemoine, on the probable decrease of flowing water in the basin of the Seine during the summer and autumn of 1875.—Report of the Commission which was appointed to examine a proposed new method in the construction of lightning conductors for powder magazines.—On the theory of revolution surfaces which, by way of deformation, can be superposed on one another, and each on itself in all its parts (second paper), by M. F. Reech.—A note by M. Sekowski, on a system of distribution in steam-engines.—On the synthesis of terpilene or carburetted camphene, by M. G. Bouchardat.—A note by M. Barthelemy, on a process to measure the co-efficient of the absolute dilatation of mercury.—A note by M. A. Rivière on the appearance of sedimentary formation in the granitic rocks now used for the pavements in the Paris streets.—A note by M. E. Jourdy on the shape of bays in the Algerian district.—A memoir by M. L. V. Turquan, on the integration of the equation with partial derivatives of the third order, and two independent variables.—A note by M. Lecoq de Boisbaudran, on the theory of dissolution and of crystallisation.—Report of the falling of two meteoric stones in the United States, by M. J. Lawrence Smith, of Louisville (Ky.). The author gives a minute description and an analysis of these two meteorites.—On the influence of forests upon the climate, and on the variation of temperature with the phases of vegetation, by M. L. Fautrat.

BOOKS AND PAMPHLETS RECEIVED

FOREIGN.—Annales del Museo Publico de Buenos Aires.—Annalen des Physikalischen Central Observatoriums for 1873: H. Wild (Russia).—Morphologisches Jahrbuch. Eine Zeitschrift für Anatomie und Entwickelungsgeschichte: C. Gegenbaur (Leipzig, W. Engelmann).—Die Neue Schöpfungsgeschichte: Arnold Dodel (Leipzig, F. N. Brockhaus).—Handbuch der Zoologie. 3 vols.: J. Victor Carus and C. E. A. Gerstaecker (Leipzig, W. Engelmann).—Boletin de la Academia Nacional de Ciencias Exactus existante en la Universidad de Cordoba, Buenos Aires.—Jahrbücher für Wissenschaftliche Botanik: Dr. N. Pringsheim (Leipzig, Wm. Engelmann).—Sie Alcundi Principj di Elettrostatica. Serie di Esperienze del Prof. G. Cantoni (Milan, F. Vallardi).—Salla Polarizzione dei Coibenti: Prof. G. Cantoni.—Efficacia dei Vapori nell 'Interus dei liquidi: Prof. G. Cantoni.—Sul limite di resistenza nei Coibenti Elettrica: Prof. G. Cantoni.—Importante Osservazioni di C. B. Beggaria sui Condensatori Elettrica: Prof. G. Cantoni.—Sie Talune particolari Forme di Cirri: Prof. G. Cantoni.—Sperienze d'Elettrostatica (two parts): Prof. G. Cantoni.—Nuvoa Serie di Sperimenti su l'Etherogenia: Prof. G. Cantoni.—Verdhandlungen des Vereins für Naturwissenschaftliche Unterhaltung zu Hamburg, 1871-74: J. D. E. Schmelz (Hamburg, L. Friederichen und Co.)—Jahrbuch der k. k. Geologischen Reichsanstalt. No. 1, 1875 (Wien).—Uber die Palæozoischen Gebilde Podoliens und deren Versteinerungen: Dr. Alois v. Alth (Wien).—Uber die Triadischen Pelecypoden: Gattungen, Daonella und Halobia: Dr. E. M. v. Mojsvár (Wien).—Die Culm Flora des Mahrisch Schlesischen Dachechieffers: Dr. Steer (Wien).

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